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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/497,482	02/04/2000	Masahiro Suzuki	103689.01	7544

25944 7590 11/17/2005

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EXAMINER	
HENN, TIMOTHY J	
ART UNIT	**PAPER NUMBER**
2612	

DATE MAILED: 11/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/497,482	SUZUKI ET AL.	
	Examiner	Art Unit	
	Timothy J. Henn	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 August 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12 and 40-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12 and 40-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 August 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 23 August 2005 with respect to claims 7-10 have been fully considered but they are not persuasive. Regarding claims 7-10 Applicant argues that Juenger et al does not disclose the use of filter coefficients as claimed. However, Juenger discloses the use of averaging a block of pixels to obtain a new value (c. 7, ll. 29-41). The examiner notes that the claim as written places no limitations on the "filter coefficients" themselves or how they are used in the interpolation/low-pass filtering and notes that in the process of Juenger each piece of image data used in the average process can be considered to have a coefficient of 1 associated with it. Further, since the process of Juenger creates new data which does not include color fringe artifacts, it can be considered to be simultaneous interpolation and low-pass filtering as claimed. Therefore, the rejection of claims 7-10 is maintained.

2. Applicant's arguments with respect to claim 1-6 and 10-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1, 2, 4, 5, 40, 42, 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. (US 5,153,730) in view of Laroche et al. (US

5,373,322) in view of Kijima et al. (US 6,661,451).

[claim 1]

Regarding claim 1, Nagasaki discloses a digital camera comprising: an image capturing device that captures a subject image having passed through a taking lens and outputs image data (Figure 1, Item 12); a first image processing circuit that performs pre-treatment on image data corresponding to N lines X M rows output by the image capturing device (i.e. the inherent resolution of the imaging device) to create a first image data (Figure 1, Item 15); a first memory device in which the first image data is temporarily stored (Figure 1, Item 34); a second image processing circuit for processing the first image data stored in the first memory (Figure 1, Item 31 or 33); and a recording processing circuit that performs recording processing on the image data (Figure 1, Item 32). However, Nagasaki does not disclose performing format processing appropriate for recording processing on image data in units of blocks each ranging over n lines X m rows in block sequence.

However, Nagasaki discloses that the imaging device used includes red, green and blue filters provided on the surface thereof (c. 4, l. 6-8). Laroche discloses that interpolation processing is used to convert sparsely sampled color image data to a full RGB image (c. 3, ll. 26-30) and further discloses a process which can be used to create full RGB images (Figures 3 and 4; c. 4, l. 32 - c. 6, c. 58). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include format processing as taught by Laroche which creates a full RGB image by processing in units of blocks to fill in missing data from the image obtained by the

sensor of Nagasaki. Nagasaki in view of Laroche further lacks outputting image data in line sequence from the image capturing device.

However, outputting image data in line sequence (e.g. progressive or raster scanning) is notoriously well known in the art. For example, Kijima discloses a method of reading image data from a CCD device in which pixel signals are read in a line-sequential manner (i.e. in units of lines in line sequence) in order to obtain fine image data (e.g. c. 3, ll. 51-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to read out image data in line sequence in the camera of Nagasaki in view of Laroche as taught by Kijima to obtain a fine image. It is noted that the image data will be processed in the manner it is output by the first image processing circuit of Nagasaki (see Figure 1).

[claim 2]

Regarding claim 2, Nagasaki discloses a recording processing circuit which is a compression circuit (Figure 1, Item 32).

[claims 4 and 5]

In regard to claims 4 and 5, note that these claims contain all limitations of claims 1 and 2 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claims 1 and 2. Official Notice is taken that it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made

to implement a software version of the apparatus of claims 1 and 2 as claimed in claims 4 and 5.

[claim 40]

Regarding claim 40, Nagasaki discloses a second memory device in which the second image data is temporarily stored, wherein the recording processing circuit performs the recording processing on the second image data stored in the second memory device (Figure 1, Item 37; c. 5, ll. 28-38).

[claim 42]

Regarding claim 42, Nagasaki discloses a first memory device which temporarily stores at least one frame of the image data (Figure 1, Item 34).

[claim 45]

Regarding claim 45, Nagasaki discloses an image capture device which captures a subject image to output an analog image data and includes and A/D converter that converts the analog imaging signal to the image data that is digital (Figure 1; Items 12 and 16).

[claim 46]

Regarding claim 46, Nagasaki discloses creating luminance and color difference signals from the image data using image data (i.e. blocks) (c. 8, l. 46 - c. 9, l. 53). The examiner notes that such luminance and color difference data is inherently appropriate for compression.

5. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. (US 5,153,730) in view of Laroche et al. (US 5,373,322) in view of Kijima et al. (US 6,661,451) in view of Miyake (US 5,631,701).

[claim 3]

Regarding claim 3, Nagasaki in view of Laroche in view of Kijima discloses format processing which includes interpolation processing, LPF and BPF processing and color different signal processing (Laroche; Figure 2; The examiner notes that since the averaging used in the interpolation processing of Laroche removes some high frequency data it can be considered LPF and BPF as well as interpolation). However, Nagasaki in view of Laroche in view of Kijima lacks pre-processing including white balancing and gamma correction.

Miyake discloses that white balancing and gamma correction can be included in image preprocessing circuits (c. 3, ll. 50-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include white balancing and gamma correction in the system of Nagasaki in view of Laroche in view of Kijima to obtain images which are white balanced and gamma corrected.

[claim 6]

In regard to claim 6, note that these claims contain all limitations of claim 3 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claim 3. Official Notice is taken that it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single

application and allows for easy upgrading. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claim 3 as claimed in claim 6.

6. Claims 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 6,289,127) in view of Juenger et al. (US 5,778,106).

[claim 7]

Regarding claim 7, Sasaki discloses a digital camera comprising: an image-capturing device (Figure 7, Item 3) that captures a subject image having passed through a taking lens (Figure 7, Item 1) and outputs image data and a recording processing circuit that performs recording processing on image data (Figure 7, Item 9; c. 1, ll. 37-62). However, Sasaki does not disclose an image processing circuit that, with the image data output by the image capturing device as data corresponding to n lines X m rows, calculates a color difference signal based upon the image data thus input, performs interpolation processing a low pass filtering processing simultaneously on said color difference signal using filter coefficients for interpolation/low pass filtering and then performs matrix processing appropriate for recording performed at said recording processing circuit to generate a formatted signal.

Juenger teaches an interpolation system wherein RGB are linearly interpolated, the interpolated RGB signals are converted into color difference signals (e.g. R-G, B-G), median filtering processing is performed on the color difference signals in order to reduce color fringe artifacts and the processed color difference signals are converted

back into RGB signals (c. 6, ll. 33 - c. 8, l. 13). The examiner notes that the median filtering processing of Juenger includes both interpolation (i.e. obtaining new signal values from a set of known values) and low pass filtering (i.e. removing high frequency signal components) characteristics and therefore can read on the simultaneous "interpolation/low pass filtering" claimed. It is further noted that the processing of Juenger inputs values from nine pixels and replaces the pixel value at the center of the filter region with the median value of all the pixels within the region, therefore it can be said that each pixel in the region has a "filter coefficient" of 1. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the processing of Juenger in the camera of Sasaki to remove color fringe artifacts. However, Sasaki in view of Juenger does not explicitly disclose performing matrix processing appropriate for recording on the processed color difference signals.

Sasaki teaches compressing the taken image using a JPEG encoding scheme (c. 1, ll. 37-62). Official Notice is taken that one is able to obtain higher compression with JPEG when using luminance/chrominance color spaces such as YUV or YCrCb. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to convert the processed RGB signals of Sasaki in view of Juenger into luminance/chrominance color space (i.e. matrix processing) in order to maximize the amount of compression obtained from the JPEG encoding scheme used.

[claim 8]

Regarding claim 8, Sasaki discloses a recording processing circuit which is constituted of a compression circuit that compresses image data (Figure 1, Item 9; c. 1,

ll. 37-62).

[claims 9 and 10]

In regard to claims 9-10, note that these claims contain all limitations of claims 7-8 with the inclusion of a storage medium having a program stored therein to store a method which performs the steps taken by the apparatus in claims 7-8. Official Notice is taken that it is well known in the art to implement methods in software to take advantage of general purpose hardware which does not need to be specifically designed for a single application and allows for easy upgrading. Therefore, It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a software version of the apparatus of claims 7-8 as claimed in claims 9-10.

7. Claims 11, 12, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. (US 5,153,730) in view of Juenger et al. (US 5,778,106) in view of Kijima et al. (US 6,661,451).

[claim 11]

Regarding claim 11, Nagasaki discloses a digital camera comprising: an image capturing device that captures a subject image having passed through a taking lens and outputs image data (Figure 1, Item 12); a first image processing circuit that performs pre-treatment on image data corresponding to N lines X M rows output by the image capturing device (i.e. the inherent resolution of the imaging device) to create a first image data (Figure 1, Item 15); a first memory device in which the first image data is

temporarily stored (Figure 1, Item 34); a second image processing circuit for processing the first image data stored in the first memory (Figure 1, Item 31 or 33); and a recording processing circuit that performs recording processing on the image data (Figure 1, Item 32). However, Nagasaki does not disclose performing format processing appropriate for recording processing on image data in units of blocks each ranging over n lines X m rows in block sequence wherein the format processing includes median processing.

Juenger teaches an interpolation system wherein RGB are linearly interpolated, the interpolated RGB signals are converted into color difference signals (e.g. R-G, B-G), median filtering processing is performed on the color difference signals in order to reduce color fringe artifacts and the processed color difference signals are converted back into RGB signals (c. 6, ll. 33 - c. 8, l. 13). The examiner notes that the processing of Juenger occurs in blocks (c. 6, l. 48 - c. 8, l. 13). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to perform the processing of Juenger in the camera of Nagasaki to remove color fringe artifacts. Nagasaki in view of Juenger further lacks outputting image data in line sequence from the image capturing device.

However, outputting image data in line sequence (e.g. progressive or raster scanning) is notoriously well known in the art. For example, Kijima discloses a method of reading image data from a CCD device in which pixel signals are read in a line-sequential manner (i.e. in units of lines in line sequence) in order to obtain fine image data (e.g. c. 3, ll. 51-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to read out image data in line sequence in

the camera of Nagasaki in view of Juenger as taught by Kijima to obtain a fine image. It is noted that the image data will be processed in the manner it is output by the first image processing circuit of Nagasaki (see Figure 1).

[claim 12]

Regarding claim 12, the examiner notes that the processing of Juenger will be applied to a finite number of sets of data depending on the resolution of the image taken by Nagasaki, and that the values i and j can be set such that (n-i) x (m-j) will equal the number of sets processed.

[claims 43 and 44]

Claims 43 and 44 contain the limitations of claims 11 and 12 respectively. Therefore, claims 43 and 44 are analyzed and rejected as previously discussed with respect to claims 11 and 12.

8. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagasaki et al. (US 5,153,730) in view of Laroche et al. (US 5,373,322) in view of Kijima et al. (US 6,661,451) in view of Anderson (US 6,532,039).

[claim 41]

Regarding claim 41, Nagasaki in view of Laroche in view of Kijima lacks a camera in which the first and second memory are the same memory device. Anderson discloses a camera which includes a DRAM memory device (Figure 3, Item 346; Figure 4; c. 4, l. 66 - c. 5, l. 26) which is used for storing both recently captured data (similar to memory 34 of Nagasaki) and data which is being processed (similar to memory 37 of

Nagasaki). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make memory devices 34 and 37 of Nagasaki a single memory device as taught by Anderson to reduce the number of components in the camera.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Henn whose telephone number is (571) 272-7310. The examiner can normally be reached on M-F 9:00 AM - 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on (571) 272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
11/12/05

NGOC YEN VU
PRIMARY EXAMINER